

Preindlsberger's cases the upper poles are united instead of the lower ones.) The great vessels habitually lie behind the central mass, while, as a rule, the ureters descend in front of it. There are usually two separate and normal pelvis and ureters, but ureteral and vascular abnormalities often occur. Since the possibility of partial nephrectomy has become generally recognised, the horse-shoe kidney has lost its terrors. A contemplated nephrectomy need not be abandoned if this condition is encountered. Resection of the affected half of the organ may be performed, although, of course, the other half must be spared.

**Atrophy of the Kidney.**—Atrophy of one kidney may be congenital or acquired. Congenital atrophy is infrequent, while acquired atrophy, the result of interstitial nephritis or of ureteral obstruction, is common. The existence of this condition enforces the rule, *Never perform nephrectomy unless you are sure that the opposite kidney is present and functioning* (p. 640).

**Supernumerary Kidney.**—Supernumerary kidneys are most uncommon. Morris records 3 cases, of which 2 were examples of small accessory organs lying near one of the kidneys. The third case, reported by Watson Cheyne,<sup>1</sup> is unique in that the supernumerary kidney lay at the pelvic brim and was found during a laparotomy.

MISPLACED KIDNEY

A misplaced kidney is by no means a movable or floating kidney, though the two conditions may coexist. A fused kidney is usually misplaced, a misplaced kidney often misshapen. Usually only one kidney is affected. The misplaced organ commonly lies near the sacro-iliac synchondrosis, exceptionally in the true pelvis or the opposite loin. The condition is usually congenital, though a movable kidney may become fixed in an abnormal position.

The clinical features of misplaced kidneys are: (a) the danger of mistaking them for abdominal tumours, and (b) the painful and pathological effects of pressure upon the misplaced organ itself as well as upon the adjoining organs. Hoehenegg<sup>2</sup> records 9 nephrectomies for this condition. Buss<sup>3</sup> reports an additional nephrectomy, and Dewis<sup>4</sup> a nephrotomy.

<sup>1</sup> Lancet, 1899, i, 215.

<sup>3</sup> Zeitschr. f. klin. Med., 1900, xxxix, 439.

<sup>2</sup> Wien. klin. Wochenschr., 1900, xiii, 4. <sup>4</sup> Boston Med. and Surg. J., 1901, cxlv, 35.

CHAPTER XXXIV

MOVABLE OR FLOATING KIDNEY—NEPHROPTOSIS

THE kidney is naturally endowed with a certain degree of mobility. Like the other abdominal viscera it moves with respiration and its position is influenced by the attitude of the subject. Yet this condition is entirely normal. Such a kidney is not distinctly palpable. A movable kidney, on the other hand, is one that is subject to downward displacement to such an extent that it may be distinctly palpated by the usual methods of examination. English authors distinguish between movable kidney and floating kidney. The former is subject to downward displacement only behind the peritoneum; the latter may also be displaced forward towards the anterior abdominal wall, and often possesses a mesonephron. Continental writers distinguish mobility of the first degree (the fingers can grasp the kidney), the second degree (the fingers can be brought together above the organ), and the third degree (the kidney can be depressed into the iliac fossa).

FREQUENCY

The recorded frequency of movable kidney varies with the point of view of the author and the delicacy of his sense of touch. The widely divergent opinions of various writers may be tabulated thus:

	WOMEN.		Per cent.	MEN.		Per cent.
	Cases examined.	Movable kidney.		Cases examined.	Movable kidney.	
Bergmann <sup>1</sup> .....	905	40	4.41	828	4	0.48
Einhorn <sup>2</sup> .....	543	112	20	772	14	1.81
Idem <sup>3</sup> .....	832	240	28	1,080	42	3.88
Mathieu <sup>4</sup> .....	306	85	25	...	...	...
Godard-Danhioux <sup>5</sup> .....	603	212	35	268	6	2.33
Suckling <sup>6</sup> .....	100	42	42	100	6	6
Harris <sup>7</sup> .....	126	71	56	...	...	...

<sup>1</sup> Op. cit., p. 134.

<sup>4</sup> Le bull. méd., 1893, vii, 1113.

<sup>2</sup> Med. Record, 1898, liv, 220.

<sup>5</sup> Guyon's Annales, 1901, xix, 197.

<sup>3</sup> Ibid., 1901, lix, 561.

<sup>6</sup> Edinb. Med. J., 1898, iv, 228.

<sup>7</sup> J. of the Am. Med. Ass'n, 1901, xxxvi, 1527.

Many of these statistics are obviously compiled *in camera*, and represent only the physician's interpretation of the term "movable kidney" without any reference to the patient's symptoms. The average observer will probably recognise a movable kidney in 20% of women and 2% of men; yet the cases which have symptoms and require treatment are far fewer than this.

There is a general agreement that in 8 cases out of 10 the right kidney only is movable; of the remainder the majority are bilateral, unilateral left-sided nephroptosis being most unusual. When both kidneys are movable, the right kidney is usually more movable than the left.

Although movable kidneys have been discovered in patients of all ages, as a rule the symptoms of the disease appear in the third decade of life and disappear between the fortieth and fiftieth years.

#### PATHOGENESIS

Our conceptions of how the kidney becomes movable are only just emerging from an overwhelming mass of contradictory assertions. Without pausing to confuse the issue by reporting every shade of opinion, it is safer to plunge at once into the subject, guiding ourselves by a symptom rather than by any man's views, placing our credence only in facts that are proved, and leaving open questions open still. To be satisfactory, a theory must explain (*a*) the predominance of movable kidney in woman, (*b*) the frequency with which it occurs on the right side, and (*c*) its importance between the ages of twenty and forty.

We shall consider:

*a.* Causes of Congenital Nephroptosis.

*b.* Causes of Acquired Nephroptosis.

Primary Predisposing Cause.—Shape of the lumbar recess.

Secondary Predisposing Causes { Enteroptosis.  
Pregnancy.  
Emaciation.

Exciting Causes { Corsets.  
Trauma.

*a.* **Causes of Congenital Nephroptosis.**—The existence of congenital nephroptosis has been doubted, but the possibility of such a condition is proved by such cases as Dr. W. R. Stewart's. In this case an exploratory operation performed for intestinal obstruction on an infant eight months old disclosed a floating kidney. Abt<sup>1</sup> and Morris have collected similar cases. Yet the discovery of a movable

<sup>1</sup> J. of the Am. Med. Ass'n, 1901, xxxvi, 1166.

kidney in a child is undoubtedly exceptional, and the presence of any symptoms before puberty is rarer still.

With our present knowledge it is impossible to say what may be the cause of this condition. It has not been determined how far the factors that operate in later life are at work, and how great a part actual abnormal development plays.

*b.* **Causes of Acquired Nephroptosis.**—**Primary Predisposing Cause.**—Wolkow and Delitzen<sup>1</sup> have shown by an extensive series of pathological investigations that there is quite a wide variation in the size of the niche in the loin occupied by the kidney. The paravertebral niche, as they call it, is shallower in women than in men, shallower on the right side<sup>2</sup> than on the left. The feminine peculiarity appears with the broadening of the pelvis at the advent of puberty; and it is this feminine, right-sided shallowness of the bed in which the kidney lies that is the chief predisposing cause of nephroptosis. Harris has gone even further, and maintains that the chief characteristics of the body form that predispose to nephroptosis "are a marked contraction of the middle zone of the body with a diminution in the capacity of this portion of the body cavity. This diminution in the capacity of the middle zone depresses the kidney, so that the constricted outlet of the zone comes above the centre of the organ, and all acts, such as coughing, straining, lifting, flexions of the body, etc., which tend to adduct the lower ribs, press on the upper pole of the kidney and crowd it still farther downward. It is the long-continued repetition, in a suitable body form, of these influences, which collectively may be called internal traumata, that gradually produces a movable kidney." Not every one is willing to lay so much stress on the predisposing cause, though Wolkow and Delitzen have proved that its influence has been much underrated.<sup>3</sup>

**Secondary Predisposing Causes.**—The internal traumata just mentioned, and many others, such as intermittent renal congestion during menstruation, prolapse, and inflammation of the pelvic organs, etc., may be included here; but we need discuss only four alleged causes—viz., enteroptosis, weakness of the abdominal wall, pregnancy, and emaciation.

*Enteroptosis* is a general condition, of which nephroptosis is often one of the features. Glenard<sup>4</sup> considers that nephroptosis never exists without a general enteroptosis, but he stands alone in this

<sup>1</sup> Die Wanderniere, 1899, Berlin.

<sup>2</sup> Chiefly because the liver fills the upper segment of the niche on this side.

<sup>3</sup> The theory that enteroptosis is an evidence of degeneracy has been propounded by Stiller, Tuffier, and Albarran, but this theory has not met with general acceptance.

<sup>4</sup> Les Ptoses viscérales, Paris, 1899. Lyon méd., 1885, xlv, 8.

opinion. Einhorn<sup>1</sup> has seen 27 cases of enteroptosis without nephroptosis, and 213 cases in which both conditions existed; hepatoposis occurred with nephroptosis only 30 times, 54 times without it; while in 57 cases only the kidney was movable. Similarly Godard-Danhieux<sup>2</sup> records 131 cases of nephroptosis without enteroptosis, and 81 cases with it; while in 97 instances there was enteroptosis without nephroptosis. Obviously, then, enteroptosis plays only a secondary rôle. When the two coexist it is quite as possible they are due to similar causes as that the one depends upon the other. I can comprehend how a loose liver should depress the kidney below it and favour its mobility; but a general enteroptosis can influence the position of the kidney only by leaving room for its displacement.

*Pregnancy* introduces another dispute. It is an accepted fact that repeated pregnancies favour relaxation of the abdominal wall and enteroptosis, yet there is an absolute disagreement in the statistics on nephroptosis. Landau, Senator, Moulin, Morris, and others maintain that movable kidney is more frequent in women who have borne children, while Küttner, Godard-Danhieux, and Lindner defend the opposite theory. It would certainly seem probable that tendency to mobility in a kidney would be increased by the abdominal strain of parturition, and the resultant abdominal flaccidity.

*Weakness of the abdominal wall*, Wolkow and Delitzen insist, is a strong predisposing factor in enteroptosis and nephroptosis. The abdominal viscera are deprived of their necessary support, and therefore sag downward, carrying the kidneys with them, in case the shallowness of the paravertebral niches makes these organs liable to prolapse. Many authors agree in this theory, which has the merits of lucidity and appositeness.

*Emaciation*, it is stated, causes nephroptosis by absorption of the perirenal fat. Morris has often noted the small quantity of fat that surrounds kidneys requiring nephrorrhaphy. Yet one can scarcely believe that the absorption of fat could be so sudden as to leave a space into which the kidney would sag. On the other hand, it is quite conceivable that the excursions of a movable kidney should discourage the deposition of fat within its fascial envelope.

*Exciting Causes.*—*Corsets* have been alternately praised and condemned. A corset that brings pressure to bear below the kidney region will, if applied while the kidney is in place, help to retain

<sup>1</sup> Med. Record, 1898, liv, 220; 1899, lvi, 397; and 1901, lix, 561.

<sup>2</sup> Gaz. hebdom., 1900, v, 159.

a movable organ; while a long-waisted corset that compresses the ribs is equally likely to encourage renal mobility. The fact that Egyptians suffer from movable kidney is evidence that the corset does not deserve all the blame which has been heaped upon it. Yet it does weaken the abdominal wall and so increases the liability to nephroptosis.

*Trauma* of one sort or another is certainly the exciting cause of all cases of movable kidney. But it is equally certain that the trauma in question is usually of a mild type. Suckling mentions the influence of constant stooping. The internal traumata recognised by Harris have been enumerated. The influence of pregnancy and corsets has already been mentioned. Bergmann insists upon the evil effect of horseback riding.

The effect of acute trauma, such as falls, kicks, and blows, is an open question. Harris absolutely denies its influence, and though many acute cases from this cause have been enumerated, I believe that in most instances the trauma has been only the cause of symptoms in an organ already movable.

#### MORBID ANATOMY

**Congenital Mobility.**—“A floating kidney with a mesonephron is, of course, always congenital” (Morris). Such cases are rare; but it is also possible that the kidney may be congenitally movable behind the peritoneum.

**Acquired Mobility.**—The kidney may be movable within its fatty capsule, or fat and kidney may move together within the fascia. The adrenal does not habitually move with the kidney. The kidney, however great its acquired mobility, does not come to have a mesonephron. It moves about behind the peritoneum, rarely making its way between mesenteric layers.

**Secondary Changes.**—As a result of long-continued mobility the renal vessels may become considerably lengthened. They are the radii of the circle in which the kidney moves; as they lengthen mobility increases.

The ureter may become kinked, and in this event, which is by no means uncommon, the free outflow of urine is obstructed and the kidney becomes hydronephrotic. Kinking of the ureter is due to the fact that it is held fast to the peritoneum, and therefore cannot partake in the renal excursion.

*Adhesions* may form as a result of repeated attacks of hydronephrosis or of other inflammation of the kidney itself or of the surrounding tissues. Such adhesions increase the ureteral obstruction and may give rise to considerable pain.

The secondary changes in the kidney are referred to in connection with hydronephrosis.

Exceptionally *gangrene of the kidney* has occurred from torsion of the pedicle.

#### SYMPTOMS

So as to bring order out of the contradictory opinions concerning the symptoms of movable kidney, we may take as the basis of our description a few commonly accepted facts. In the first place, any surgeon familiar with abdominal palpation appreciates that, in examining a patient, one occasionally finds a movable kidney—perhaps even a floating kidney—which has never given any symptoms, and of whose existence the patient will not become aware unless the surgeon announces his discovery. Then there is a second class of cases who, while having a movable kidney and suffering from various symptoms—digestive, neurotic, or pelvic—have no symptoms directly referable to the kidney itself. The organ is neither tender, adherent, nor enlarged. There is no history of hydronephrosis, no evidence of either urinary infection or renal sclerosis. Finally, there are other cases with symptoms directly referable to the kidney itself. Thus nephroptosis is encountered clinically under three aspects:

1. Nephroptosis without symptoms.
2. Nephroptosis without symptoms directly referable to the kidney.
3. Nephroptosis with symptoms directly referable to the kidney.

**Nephroptosis without Symptoms directly Referable to the Kidney.**—The greater number of cases commonly classed as movable kidney come under this head, and it is the infinite variety of symptoms which such cases present, the doubtful origin of these symptoms, and the uncertainty of their cure that has obscured the whole subject and given rise to opinions so divergent and to discussions so virulent. And so long as man retains his individuality opinions upon this subject must continue to differ. Therefore I shall not attempt the futile task of reconciliation, but shall rest satisfied with expressing a point of view which may afford a basis for discrimination in the surgical treatment of this malady which, after all, is the main point at issue.

The class of cases under discussion has but two common features: (1) The subjective symptoms are referable to any one of several diseases of organs other than the kidneys, and (2) one or both kidneys are movable, but present no signs, either subjective (pain) or objective, of disease. Such patients may present nervous symptoms, digestive disorders, or painful symptoms. These symptoms

are exhibited in greater or less degree and in various combinations.

**Nervous Symptoms.**—It is quite impracticable to detail here the various symptoms of neurasthenia with abdominal manifestations that have been attributed to renal mobility. Their name is legion. But the question that always arises is, Does the neurasthenia depend upon the movable kidney? Two answers may be suggested. If temporary reposition of the affected organ brings temporary relief from the symptoms, and if with renewal of the kidney prolapse the symptoms recur, there is, clinically speaking, an established connection between the mobility of the kidney and the nervous symptoms. In the second place, it may be found that, perhaps as a result of slight retention from kinking of the ureter, there is interstitial nephritis. In this case the nervous symptoms may possibly be attributed to renal auto-intoxication.

**Digestive Disorders.**—The flatulent dyspepsia and constipation that figure so prominently among the symptoms of nephroptosis are but rarely referable to the kidney. Einhorn's opinion upon this subject deserves quotation:

“Most of the gastric and intestinal symptoms, such as pains, eructations, nausea, occasional vomiting, irregularity of the bowels (chiefly constipation, sometimes diarrhea), which are present in persons with movable kidney, occur usually independently of the latter, and require therapeutic measures appropriate to such conditions. Gastric neuroses, which originate by reflex action from a movable kidney, are met with but rarely; among them I would place nervous vomiting and nausea. Whether cases of periodic attacks of continued gastro-succorhea can be regarded as reflex symptoms of a movable kidney appears to me doubtful. Of course these conditions are found in patients suffering from movable kidney, yet I have observed cases in which neither the wearing of an abdominal bandage nor the performance of nephrorrhaphy caused the disappearance of the periodic gastro-succorhea.”

Here, again, the tests applied to the neurotic cases are of service. If reposition of the kidney relieves the symptoms, or if there is renal insufficiency, some connection between the renal condition and the digestive disturbance may be suspected.

We may mention here the theory maintained by Edebohls<sup>1</sup> that movable kidney on the right side may cause chronic appendicitis by pressure upon the superior mesenteric vein. The relative infrequency of appendicitis in women discourages this belief.

<sup>1</sup> Post-Graduate, 1899, xiv, 85.

**Painful Symptoms.**—The pains most often caused by movable kidney are: (1) Pain and tenderness in the kidney itself. (2) Pain of a dull, dragging character low down in the back, a pain comparable to that commonly attributed to uterine retrodisplacement. (3) Frequent and painful urination. It is characteristic that these pains should be increased by exercise, and should be more severe during the menstrual period. It is evident that any or all (except the first) may be attributable to conditions other than nephroptosis. Therefore it is essential that they should be known to disappear with reposition of the kidney, and to reappear with its prolapse before we can be sure of any connection between the pain and the renal mobility.

**Nephroptosis, with Symptoms directly Referable to the Kidney.**—Here we enter upon a more definite field of investigation. If the kidney is tender and painful, if the tenderness is relieved by reposition of the organ, if there is renal colic, or if the tender kidney is enlarged or adherent in an abnormal position, we have direct physical evidence that the symptom is due to the nephroptosis. Even more characteristic is the *intermittent hydronephrosis* due to movable kidney. This condition in its fully developed form is unmistakable. The patient comes with history of a tumour in the flank. This tumour gradually grows larger during a few days or weeks and then suddenly disappears. There is an interval of a few days and then the tumour once more begins to grow. It is usually very painful and tender, and its growth is often attended by renal colic, while its disappearance is signalled by relief of the pain and accompanied by the discharge of an excessive quantity of urine. In other cases the kidney does not fill sufficiently to give a perceptible tumour, but there are repeated attacks of renal colic without passage of stones or evidences of pyelo-nephritis. Examination then reveals a movable kidney, swollen and tender during paroxysms.

Intermittent *pyonephrosis* may also occur.

The outcome of these obstructive cases is that of hydronephrosis.

#### DIAGNOSIS

If the kidney is only slightly movable this may be detected by ballottement and the other methods already described (p. 512). A floating organ may be discovered almost anywhere in the abdomen. As a rule, it is not difficult to distinguish a floating kidney from other abdominal tumours. The very mobility of the organ, the fact that it may be replaced in the loin, together with its general contour, and the sickening sensation, similar to and yet not the same as the ovarian sensation, caused by pressure upon it, are sufficiently character-

istic. Tumours arising from the ovaries or uterus may be distinguished by their pelvic attachments. To distinguish a movable kidney from a distended gall-bladder, Morris proposes the following criteria: (1) The enlarged gall-bladder as well as the kidney is a frequent cause of *movable* abdominal tumour. (2) History of jaundice. (3) The tumour caused by an enlarged gall-bladder can, in almost every case, at all times be felt, whereas a movable kidney (unless also enlarged) cannot. (4) Variability in the size of the tumour goes for nothing unless associated with sudden diuresis. (5) A calculous gall-bladder feels much harder than a movable kidney. (6) The radius of mobility of the gall-bladder differs from that of the kidney. Morris also mentions the fact that the two conditions often coexist, and that inflation of the colon for the purpose of pushing the kidney outward and the gall-bladder upward is a most unreliable means of diagnosis, since the hepatic flexure of the colon may be displaced downward and inward when either affection exists. The ultimate method of diagnosis in a doubtful case is exploratory incision. Exploratory aspiration cannot be too strongly condemned.

But the discovery of a movable kidney by no means completes the diagnosis. It is equally important to ascertain whether the symptoms are due to the nephroptosis or to something else. In some cases there can be no doubt that the kidney is at fault. If a hydronephrosis, a pyonephrosis, or an adherent organ is discovered, here is a pathological condition demanding treatment. Then there are the tender kidneys and those cases whose symptoms are temporarily relieved by rest and reposition of the displaced organ. These form a doubtful class, and merit the most minute examination and the closest watching, of which the palliative treatment of the disease forms an important part. The majority of them are complicated by some neurotic tendency, enteroptosis, or gastro-intestinal or pelvic disease. Their judicious treatment is peculiarly difficult. Finally, there are the cases in which no test can show a direct connection between the renal ptosis and the symptoms.

#### TREATMENT

In deciding upon the proper course of treatment for any individual case of movable kidney, the surgeon must bear in mind the following facts:

1. In many cases nephroptosis produces no symptoms.
2. In many instances nephropexy, while it retains the kidney in place (which it does not always do), either fails to relieve or aggravates the neurotic or dyspeptic symptoms attributed to the renal mobility.